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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,908	09/18/2003	Demetrius Sarigiannis	108298722US	7052
25096	7590	08/24/2006	EXAMINER	
PERKINS COIE LLP			STOUFFER, KELLY M	
PATENT-SEA			ART UNIT	
P.O. BOX 1247			PAPER NUMBER	
SEATTLE, WA 98111-1247			1762	

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/665,908	SARIGIANNIS ET AL.	
	Examiner	Art Unit	
	Kelly Stouffer	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 1-17 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 36-39 is/are allowed.
- 6) ☒ Claim(s) 18-25 and 27-34 is/are rejected.
- 7) ☒ Claim(s) 26 and 35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>13 April 2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 1-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11 July 2006.

Applicant's election without traverse of claims 18-39 in the reply filed on 11 July 2006 is acknowledged.

Drawings

2. The drawings are objected to because it is unclear what the labels A_x and B_y are referring to in Figures 1A and 1B without lead lines present. In addition, Figure 1B shows two different A labels where one should be A_x . Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If

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the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: X, A, Y, and B in Figures 1A and 1B. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

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The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because the phrase "disclosed herein" is present in line 2 and the first sentence repeats information given in the title. The last three lines of the abstract also include legal phraseology and an unnecessary disclaimer and it is requested that these sentences be removed. Correction is required. See MPEP § 608.01(b).

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

5.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.

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- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

The brief summary of the invention section is missing. Please replace the section heading "Overview" with --Brief Summary of the Invention-- and move the "Detailed Description" heading to replace the section labeled "Deposition Systems."

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 18, 21-25, 28, 30-31, 33, and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent number 6333272 to McMillin et al. Claim 18 of the applicant requires depositing material onto a microfeature workpiece in a reaction chamber from a first gas that has a conduit with two separate valves for sending two separate pulses of the first gas into the chamber. McMillin et al. describes a method for coating a semiconductor substrate in a reaction chamber in column 2 lines 45-46. McMillan et al. shows a gas injection arrangement where one gas flows through a top gas feed line 12 and perimeter gas feed line 14 with feedback controlled throttling valves 44 and 36 in Figure 7A and described in column 8 lines 17-27. The flow splitting

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of the two pulses is described in column 6 lines 1-15. Thus McMillin et al. meets all the recitations of claim 18, at least as broadly recited by claim 18.

With regard to claims 21 and 22, flowing the pulses at least partially simultaneously through controlled valves dispensing the pulses is described in column 6 lines 1-15. McMillin et al. meets all the recitations of claims 21 and 22, at least as broadly recited by claims 21 and 22.

In claims 23-25 the applicant requires the two gas lines to be configured in parallel and comprised of a valve assembly and separate gas passageways for each pulse of the gas to flow through. In Figure 7a, McMillan shows two gas feed lines 12 and 14 that are separate passageways into reaction chamber 10. The feedback controlled throttling valves 44 and 36 comprise their own valve assembly, at least as broadly described by the applicant. McMillin et al. meets all the recitations of claims 23-25, at least as broadly recited by claims 23-25.

With regard to claims 28, 30-31, and 33-34, McMillin et al. describes a method for coating a semiconductor substrate in a reaction chamber in column 2 lines 45-46. McMillan et al. shows a gas injection arrangement where one gas flows through two independent gas lines configured in a parallel arrangement: top gas feed line 12 and perimeter gas feed line 14 with feedback controlled throttling valves 44 and 36 that may each contain a valve stem and comprise their own valve assembly in fluid communication with a common conduit and flow into reaction chamber 10 in Figure 7A and described in column 8 lines 17-27. The flow splitting of the two pulses is described in column 6 lines 1-15. The valves 44 and 35 are controlled using Thus McMillin et al.

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meets all the recitations of claims 28, 30-31, and 33-34, at least as broadly recited by claims 28, 30-31, and 33-34.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claims 19-20, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMillin et al. McMillin et al. is described above and includes a single gas source entering a reaction chamber with two separate gas lines and corresponding valves. McMillin et al. does not include the sequence of these two pulses. McMillin et al. teaches that the flow splitting of the two gas lines can be adjusted by the user with the mass flow controllers from 0-100% in either line in column 6 lines 13-15 and that the sequence is adjusted depending on the amount of material wanted on the center or edge of the wafer substrate to be coated in column 9 lines 10-15. In column 7 lines 13-23 the mass flow controller of the valves is controlled depending on a calibration

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experiment and the types of gases being flowed into the chamber. Therefore, the variables of flow splitting and sequence depend upon the apparatus and conditions employed in the invention and their importance is based upon the type and uniformity of the coated layer created by the procedure as implied by McMillin et al in columns 6 and 7 et seq. The variables are result-effective and are not inventive.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify McMillin et al by routine experimentation to include a first pulse of gas followed by second pulse of the same gas as required by the applicant in order to fabricate a layer with desired properties, especially absent evidence showing a criticality for the claimed sequence. (See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955))

8. Claims 27 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMillin et al. in view of US Patent number 6905547 to Londergan et al. McMillin et al. is described above and includes a single gas source entering a reaction chamber with two separate gas lines and corresponding valves. McMillin et al. does not include a second gas source with two separate gas lines and corresponding valves. Londergan et al. teaches two different gases in gas switching manifold 20 that each include a multiple inject port 38 (that may contain a plurality of conduits as described in column 8 lines 31-32) with flow restrictors 1-4 that may be considered valves in Figure 5 B. Different gases have separate gas injecting apparatuses to introduce a second reactive gas into the chamber reduce cross-contamination between the first and second gases (column 8 lines 6-10).

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It would have been obvious to one of ordinary skill in the art at the time of invention to modify McMillin et al. to include more than one gas with a separate gas injection apparatus as taught by Londergan et al. in order to introduce a second reactive gas into the chamber reduce cross-contamination between the first and second gases.

Allowable Subject Matter

9. Claims 26 and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. McMillin et al. shows a single gas source with two independent gas lines and corresponding valves, but does not provide for more than two independent gas lines on the same source as required by claims 26 and 35.

10. Claims 36-39 are allowed. McMillin et al. shows a similar apparatus and allows for a sequential delivery of gas pulses, but does not provide motivation for switching one valve off before opening the other as is required by claims 36-39.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chuono et al. shows a similar apparatus

McMillin et al. (US Patent number 6142163) shows a similar apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly Stouffer whose telephone number is (571) 272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kelly Stouffer
Examiner
Art Unit 1762

kms



TIMOTHY MEEKS
SENIOR PATENT EXAMINER